

## Curriculum Map – High School Algebraic Reasoning

Course essential question: Why is it important for you to learn math?

### Module 1: Real Numbers and Introduction to Algebra

WPS Habits of Mind	<div>1. Apply prior knowledge and experiences to new situations.</div> <div>2. Construct viable arguments with evidence and evaluate the reasoning of others.</div> <div>3. Demonstrate the ability to work independently and collaboratively.</div> <div>4. Understand other perspectives and cultures.</div> <div>5. Remain open to continuous learning.</div> <div>6. Persevere in completing tasks and meeting challenges.</div>	<b>Module Focus</b>
		Use equivalent fractions as a strategy to add and subtract fractions; apply and extend previous understandings of multiplication and division to multiply and divide fractions; compute fluently with multi-digit numbers and find common factors and multiples; understand ratio concepts and use ratio reasoning to solve problems; use properties of operations to generate equivalent expressions; solve real-life and mathematical problems using numerical and algebraic expressions and equations.
		<b>Math Prerequisite Standards</b>
		All prerequisite standards are content standards (see below).
		<b>Math Content Standards</b>
		5.NF.2: Solve word problems involving addition and subtraction of fractions by using equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers.
		5.NF.6: Solve real-world problems involving multiplication of fractions and mixed numbers by using equations to represent the problem.
		6.NS.1: Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions by using equations to represent the problem.
		6.NS.2: Fluently divide multi-digit numbers using the standard algorithm.
		6.NS.3: Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
6.RP.3c: Find a percent of a quantity as a rate per 100; solve problems involving finding the whole, given a part and the percent.		
6.EE.3: Apply the properties of operations to generate equivalent expressions.		
7.EE.1: Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.		
7.EE.3: Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.		
<b>Supporting Standards</b>		
SMP1: Make sense of problems and persevere in solving them.		
SMP2: Reason abstractly and quantitatively.		
SMP5: Use appropriate tools strategically.		
SMP8: Look for and express regularity in repeated reasoning.		
<b>Essential Questions for this Unit</b>		
<div>• When are algebraic and numeric expressions used?</div> <div>• When do you use math in your everyday life?</div> <div>• Why are fractions important?</div>		

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- Why do we have an established order of operations?

Resources	Key Vocabulary	Sample Informal Assessments	Sample Pacing
R.2 Fractions R.3 Decimals and Percents	Sum Difference Product Quotient Fraction Percent Whole Part	Students add, subtract, multiply and divide with fractions or decimals in a given context. <i>Ex.: Given a brick wall where each brick measures <math>2\frac{1}{4}</math> inches tall, and the mortar is <math>\frac{1}{8}</math> inches thick between each brick, how tall will a wall with 7 layers of brick and mortar be?</i>	2 days
1.3 Exponents, Order of Operations and Variable Expressions 1.4 Adding Real Numbers 1.5 Subtracting Real Numbers 1.6 Multiplying and Dividing Real Numbers 1.7 Properties of Real Numbers 1.8 Simplifying Expressions 2.6 Percent and Mixture Problem Solving	Exponent Base Variable Coefficient Expression Equation Opposite Integer Rational number Simplify Distribute Combine like terms	Solve multi-step problems with rational numbers in a context. <i>Ex: If a woman making \$25 an hour gets a 10% raise, she will make an additional <math>\frac{1}{10}</math> of her salary an hour, or \$2.50, for a new salary of \$27.50.</i> <i>Ex. If you want to place a towel bar <math>9\frac{3}{4}</math> inches long in the center of a door that is <math>27\frac{1}{2}</math> inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.</i>	9 days
<b>Notes</b>			

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## Module 2: Linear Equations, Inequalities and Problem Solving

WPS Habits of Mind	1. Apply prior knowledge and experiences to new situations. 2. Construct viable arguments with evidence and evaluate the reasoning of others. 3. Demonstrate the ability to work independently and collaboratively. 4. Understand other perspectives and cultures. 5. Remain open to continuous learning. 6. Persevere in completing tasks and meeting challenges.	Module Focus		
		Write expressions in equivalent forms to solve problems; understand solving equations as a process of reasoning and explain the reasoning; solve equations and inequalities in one variable; create equations that describe numbers or relationships		
		Math Prerequisite Standards		
		8.G.5: Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. 8.EE.7: Solve linear equations in one variable. 8.EE.7a: Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$ , $a = a$ , or $a = b$ results (where $a$ and $b$ are different numbers). 8.EE.7b: Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.		
		Math Content Standards		
		A.SSE.3: Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. A.REI.1: Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method. A.REI.3: Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters. A.CED.1: Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear functions. A.CED.4: Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.		
		Supporting Standards		
G.CO.1: Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc. SMP3: Construct viable arguments and critique the reasoning of others. SMP7: Look for and make use of structure.				
Essential Questions for this Unit				
<ul style="list-style-type: none"><li>What does a linear equation represent?</li><li>How is solving linear inequalities the same/ different than solving equations?</li><li>How do we interpret the solution of a linear equation or inequality?</li></ul>				
Resources		Key Vocabulary	Sample Informal Assessments	Sample Pacing
2.1 The Addition Property of Equality 2.2 The Multiplication Property of Equality 2.3 Further Solving Linear Equations 2.4 An Introduction to Problem Solving 2.5 Formulas and Problem Solving		Linear Equation Solution set Equivalent expression Conditional equation Identity		10 days

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2.7 Linear Inequalities and Problem Solving	Contradiction Complementary angles Right angle Supplementary angles Straight angles Consecutive integers Formula Area Perimeter Vertical angles Inequality Interval Interval notation Linear inequality Three-part inequality		
Notes			

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## Module 4: Graphing Linear Equations and Inequalities

WPS Habits of Mind	<div>1. Apply prior knowledge and experiences to new situations.</div> <div>2. Construct viable arguments with evidence and evaluate the reasoning of others.</div> <div>3. Demonstrate the ability to work independently and collaboratively.</div> <div>4. Understand other perspectives and cultures.</div> <div>5. Remain open to continuous learning.</div> <div>6. Persevere in completing tasks and meeting challenges.</div>	<b>Module Focus</b>
		Understand solving equations as a process of reasoning and explain the reasoning; solve equations and inequalities in one variable; create equations that describe numbers or relationships; build a function that models a relationship between two quantities; construct and compare linear, quadratic, and exponential models to solve problems; summarize, represent, and interpret data on two categorical and quantitative variables; interpret linear models; interpret functions that arise in applications in terms of the context; analyze functions using different representations; use coordinates to prove simple geometric theorems algebraically.
		<b>Math Prerequisite Standards</b>
		<b>8.F.3:</b> Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear.
		<b>Math Content Standards</b>
		<b>S.ID.6a:</b> Fit a function to the data; use functions fitted to data to solve problems in the context of the data. Use given functions or choose a function suggested by the context. <b>S.ID.7:</b> Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data. <b>S.ID.8:</b> Compute (using technology) and interpret the correlation coefficient of a linear fit. <b>G.GPE.5:</b> Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point). <b>A.REI.1:</b> Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method. <b>A.REI.3:</b> Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters. <b>A.CED.1:</b> Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear functions. <b>A.CED.2:</b> Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. <b>A.CED.3:</b> Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context. <b>F.BF.1b:</b> Combine standard function types using arithmetic operations. <b>F.IF.5:</b> Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. <b>F.IF.7:</b> Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. <b>F.LE.2:</b> Construct linear functions given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).
		<b>Supporting Standards</b>
		(none)
<b>Essential Questions for this Unit</b>		
<div><div>• What is the importance of the parent graph <math>y=x</math>?</div><div>• When would you prefer a graph to a table or an equation?</div><div>• What does slope represent?</div></div>		

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- How is the slope of a linear equation used to help solve problems and make predictions?

Resources	Key Vocabulary	Sample Informal Assessments	Sample Pacing
6.1 Reading Graphs and the Rectangular Coordinate System 6.2 Graphing Linear Equations 6.3 Intercepts 6.4 Slope and Rate of Change 6.5 Equations of Lines 6.6 Introduction to Functions 6.7 Graphing Linear Inequalities in Two Variables	Quadrants Origin Coordinate Plane Ordered Pairs Standard Form Linear Function x-axis y-axis x-intercept y-intercept Slope Rise Run Rate of Change Slope-Intercept Form Parallel Plane Direct Variation Constant of Variation Point-Slope Form Standard Form Converse Parallel Lines Perpendicular Lines Conditional Statement Scatter Plot Correlation Line of Fit Best-Fitting Line Linear Regression Boundary Line		12 days
<b>Notes</b>			
Make sure to emphasize point-slope form more than what is typical...			

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## Module 5: Systems of Equations

WPS Habits of Mind	1. Apply prior knowledge and experiences to new situations. 2. Construct viable arguments with evidence and evaluate the reasoning of others. 3. Demonstrate the ability to work independently and collaboratively. 4. Understand other perspectives and cultures. 5. Remain open to continuous learning. 6. Persevere in completing tasks and meeting challenges.	Module Focus		
		Solve systems of equations; represent and solve equations and inequalities graphically; create equations that describe numbers or relationships.		
		Math Prerequisite Standards		
		8.EE.7: Solve linear equations in one variable. 8.EE.7b: Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.		
		Math Content Standards		
		A.REI.5: Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions. A.REI.6: Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables. A.REI.12: Represent and solve equations and inequalities graphically. Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes. A.CED.3: Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context.		
		Supporting Standards		
Essential Questions for this Unit				
<ul style="list-style-type: none"><li>What are systems of equations, and why do we solve them?</li><li>How do you determine the best method for solving a system?</li></ul>				
Resources		Key Vocabulary	Sample Informal Assessments	Sample Pacing
7.1 Solving Systems of Linear Equations by Graphing 7.2 Solving Systems of Linear Equations by Substitution 7.3 Solving Systems of Linear Equations by Addition 7.4 Systems of Linear Equations and Problem Solving		System of equations Solution of a system Solution set Consistent system Inconsistent system Independent equations Dependent equations System of linear inequalities		10 days
Notes				



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### Module 3: Operations with Exponents and Polynomials

WPS Habits of Mind	<div>1. Apply prior knowledge and experiences to new situations. 2. Construct viable arguments with evidence and evaluate the reasoning of others. 3. Demonstrate the ability to work independently and collaboratively. 4. Understand other perspectives and cultures. 5. Remain open to continuous learning. 6. Persevere in completing tasks and meeting challenges.</div>	<b>Module Focus</b>	Perform arithmetic operations on polynomials; write expressions in equivalent forms to solve problems; extend the properties of exponents to rational exponents.			
		<b>Math Prerequisite Standards</b>	6.EE.1: Write and evaluate numerical expressions involving whole-number exponents 8.EE.1: Know and apply the properties of integer exponents to generate equivalent numerical expressions. 8.EE.2: Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$ , where $p$ is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that is irrational. 8.EE.3: Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. 8.EE.4: Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year)			
		<b>Math Content Standards</b>	A-APR.1: Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials. A-APR.MA.1a: Divide polynomials. N.RN.1: Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents A.SSE.3c: Use the properties of exponents to transform expressions for exponential functions.			
		<b>Supporting Standards</b>	N-RN.3: Explain why the sum or product of two rational numbers is rational; that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational number is irrational.			
		<b>Essential Questions for this Unit</b>				
		<div>• How are polynomials used outside of the classroom? • How can you simplify expressions that involve exponents? • How are operations on polynomials performed?</div>				
		Resources		Key Vocabulary		Sample Informal Assessments
						Sample Pacing



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3.1 Exponents 3.2 Negative Exponents and Scientific Notation 3.3 Introduction to Polynomials 3.4 Adding and Subtracting Polynomials 3.5 Multiplying Polynomials 3.6 Special Products	Term Like terms Polynomials Descending powers Degree of a term Degree of a polynomial Monomial Binomial Trinomial Constant Exponential expression Outer product Inner product Conjugate Scientific notation	1. What is the sum of $\frac{2x}{3x^2} + \frac{-4x^2}{x}$ ? Explain your reasoning. 2. A student was overheard saying, "To simplify an exponential expression involving negative exponents, move the power and change the sign of the exponent." Explain in greater detail what the student was saying. 3. When simplified, is $-3^6$ positive or negative? Why?	13 Days
Notes			

### Module 6: Factors and Factoring Polynomials

<b>WPS Habits of Mind</b> 1. Apply prior knowledge and experiences to new situations. 2. Construct viable arguments with evidence and evaluate the reasoning of others. 3. Demonstrate the ability to work independently and collaboratively. 4. Understand other perspectives and cultures. 5. Remain open to continuous learning. 6. Persevere in completing tasks and meeting challenges.	<b>Module Focus</b>
	Solve equations and inequalities in one variable; interpret the structure of expressions; write expressions in equivalent forms to solve problems.
	<b>Math Prerequisite Standards</b>
	<b>6.NS.4:</b> Find the greatest common factor of two whole numbers. Use the distributive property to express a sum of two whole numbers with a common factor as a multiple of a sum of two whole numbers with no common factor. <i>For example, express <math>36 + 8</math> as <math>4(9 + 2)</math>.</i> <b>6.NS.4a:</b> Apply number theory concepts, including prime factorization and relatively prime numbers, to the solution of problems.
	<b>Math Content Standards</b>
	<b>A-REI.4b:</b> Solve quadratic equations by inspection (e.g., for $x^2 = 49$ ), taking square roots, completing the square, the quadratic formula, and factoring, as appropriate to the initial form of the equation.
	<b>A-REI.4c:</b> Demonstrate an understanding of the equivalence of factoring, completing the square, or using the quadratic formula to solve quadratic equations.
	<b>A-SSE.2:</b> Use the structure of an expression to identify ways to rewrite it. <i>For example, see <math>x^4 - y^4</math> as <math>(x^2)^2 - (y^2)^2</math>, thus recognizing it as a difference of squares that can be factored as <math>(x^2 - y^2)(x^2 + y^2)</math>.</i> <b>A-SSE.3:</b> Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.

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		A-SSE.3a: Factor a quadratic expression to reveal the zeros of the function it defines. A-SSE.3b: Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.		
		Supporting Standards		
Essential Questions for this Unit				
<ul style="list-style-type: none"><li>Why do we factor polynomials?</li><li>What does a factored polynomial look like?</li><li>How do you determine the best method for factoring a polynomial?</li></ul>				
Resources		Key Vocabulary	Sample Informal Assessments	Sample Pacing
4.1 The Greatest Common Factor 4.2 Factoring Trinomials of the Form $x^2 + bx + c$ 4.3 Factoring Trinomials of the Form $ax^2 + bx + c$ 4.4 Factoring Trinomials of the Form $ax^2 + bx + c$ by Grouping 4.5 Factoring Perfect Square Trinomials and the Difference of Two Squares		Factor Factored form Greatest common factor (GCF) Prime polynomial Perfect square trinomial Quadratic Standard form		10 days
Notes				

# Curriculum Map – High School Algebraic Reasoning

## Module 7: Rational Expressions and Equations

<b>WPS Habits of Mind</b> 1. Apply prior knowledge and experiences to new situations. 2. Construct viable arguments with evidence and evaluate the reasoning of others. 3. Demonstrate the ability to work independently and collaboratively. 4. Understand other perspectives and cultures. 5. Remain open to continuous learning. 6. Persevere in completing tasks and meeting challenges.	<b>Module Focus</b>			
	Rewrite rational expressions.			
	<b>Math Prerequisite Standards</b>			
	7.EE.1: Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients. 7.EE.3: Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.			
	<b>Math Content Standards</b>			
	A-APR.6: Rewrite simple rational expressions in different forms; write $a(x)/b(x)$ in the form $q(x) + r(x)/b(x)$ , where $a(x)$ , $b(x)$ , $q(x)$ , and $r(x)$ are polynomials with the degree of $r(x)$ less than the degree of $b(x)$ , using inspection, long division, or, for the more complicated examples, a computer algebra system. A-ARP.7: Understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, multiply, and divide rational expressions.			
	<b>Supporting Standards</b>			
<b>Essential Questions for this Unit</b>				
<ul style="list-style-type: none"><li>What is the connection between rational expressions and arithmetic fractions?</li><li>Why is factoring important when simplifying rational expressions?</li></ul>				
<b>Resources</b>		<b>Key Vocabulary</b>	<b>Sample Informal Assessments</b>	<b>Sample Pacing</b>
5.1 Simplifying Rational Expressions 5.2 Multiplying and Dividing Rational Expressions 5.3 Adding and Subtracting Rational Expressions with the Same Denominator; Least Common Denominator 5.4 Adding and Subtracting Rational Expressions with Different Denominators 5.5 Solving Equations Containing Rational Expressions 5.6 Proportions and Problem Solving with Rational Equations 5.7 Simplifying Complex Fractions		Rational expression Lowest terms Least Common Denominator (LCD) Complex fraction (Rational expression)		17 days
<b>Notes</b>				
Big idea: equations can become more complex A good place for expansion: graphing complex rational equations, asymptotes, points of discontinuity, domain and range				

## Curriculum Map – High School Algebraic Reasoning

### Module 8: Roots and Radicals

WPS Habits of Mind	<div>1. Apply prior knowledge and experiences to new situations.</div> <div>2. Construct viable arguments with evidence and evaluate the reasoning of others.</div> <div>3. Demonstrate the ability to work independently and collaboratively.</div> <div>4. Understand other perspectives and cultures.</div> <div>5. Remain open to continuous learning.</div> <div>6. Persevere in completing tasks and meeting challenges.</div>	Module Focus		
		Evaluate roots; simplify and perform operations with radicals; rationalize the denominator of fractions containing radicals.		
		Math Prerequisite Standards		
		<div>8.EE.1: Know and apply the properties of integer exponents to generate equivalent numerical expressions. <i>For example, <math>3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27</math>.</i></div> <div>8.EE.2: Use square root and cube root symbols to represent solutions to equations of the form <math>x^2 = p</math> and <math>x^3 = p</math>, where <math>p</math> is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that is irrational. 2</div>		
		Math Content Standards		
		<div>A-REI.2: Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.</div> <div>N-RN.1: Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents. <i>For example, we define <math>5^{1/3}</math> to be the cube root of 5 because we want <math>(5^{1/3})^3 = 5^{(1/3)3}</math> to hold, so <math>(5^{1/3})^3</math> must equal 5.</i></div> <div>N-RN.2: Rewrite expressions involving radicals and rational exponents using the properties of exponents.</div>		
		Supporting Standards		
Essential Questions for this Unit				
<div>• What is the connection between radicals and exponents?</div>				
Resources		Key Vocabulary	Sample Informal Assessments	Sample Pacing
8.2 Simplifying Radicals 8.3 Adding and Subtracting Radicals 8.4 Multiplying and Dividing Radicals 8.5 Solving Equations Containing Radicals 8.6 Radical Equations and Problem Solving		Square root Principal square root Radicand Radical Radical expression Perfect square Irrational number Cube root Index (order) Perfect cube Like radicals		7 days
Notes				
Emphasize the principal square root definition.				

### Module 9: Solving Quadratic Equations

<b>t s</b>	<b>Module Focus</b>
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	Solve equations and inequalities in one variable; write expressions in equivalent forms to solve problems; create equations that describe numbers or relationships.			
	Math Prerequisite Standards			
	Math Content Standards			
	<p><b>A-REI.4b:</b> Solve quadratic equations by inspection (e.g., for <math>x^2 = 49</math>), taking square roots, completing the square, the quadratic formula, and factoring, as appropriate to the initial form of the equation.</p> <p><b>A-SSE.3a:</b> Factor a quadratic expression to reveal the zeros of the function it defines.</p> <p><b>A-SSE.3b:</b> Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.</p> <p><b>A-REI.4:</b> Solve quadratic equations in one variable.</p> <p><b>A-REI.4a:</b> Use the method of completing the square to transform any quadratic equation in <math>x</math> into an equation of the form <math>(x - p)^2 = q</math> that has the same solutions. Derive the quadratic formula from this form.</p> <p><b>A-REI.4b:</b> Solve quadratic equations by inspection (e.g., for <math>x^2 = 49</math>), taking square roots, completing the square, the quadratic formula, and factoring, as appropriate to the initial form of the equation.</p> <p><b>A-REI.4c:</b> Demonstrate an understanding of the equivalence of factoring, completing the square, or using the quadratic formula to solve quadratic equations.</p> <p><b>A-REI.2:</b> Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.</p>			
	Supporting Standards			
Essential Questions for this Unit				
<ul style="list-style-type: none"><li>What is the importance of the parent graph <math>y=x^2</math>?</li><li>What do quadratic equations provide? Why are they useful?</li><li>How do you decide the best method for solving a quadratic equation?</li><li>Why are there different forms of quadratic equations?</li><li>What do the domain and range of a function tell us?</li></ul>				
Resources		Key Vocabulary	Sample Informal Assessments	Sample Pacing
4.6 Solving Quadratic Equations by Factoring 4.7 Quadratic Equations and Problem Solving		Quadratic equation Standard form		2 days
9.1 Solving Quadratic Equations by the Square Root Property 9.2 Solving Quadratic Equations by Completing the Square 9.3 Solving Quadratic Equations by the Quadratic Formula 9.4 Graphing Quadratic Equations in Two Variables		Parabola Vertex Line of symmetry Domain Range Function Relation		12 days
Notes				